J.R. Simplot Company
Comments on Petition to Add Phosphate Rock Mining to SARA 313 Reporting Requirements

EPA is seeking comments on the consideration of adding facilities classified under NAICS 212392 (phosphate rock mining) to the list of facilities subject to EPCRA § 313. This consideration by EPA is based on a petition by The Greater Yellowstone Coalition (GYC) to add phosphate rock mining to SARA 313 reporting. We note that GYC submitted this same petition in 2006, and The Fertilizer Institute (TFI) in response catalogued in detail a number of legal and factual reasons why the TRI Program should not apply to these operations and circumstances. We support those comments which are attached. The GYC petition is focused on selenium releases from phosphate mining in southeastern Idaho as the basis for such a new reporting requirement. The J.R. Simplot Company (Simplot) conducts phosphate rock mining and is very familiar with the work associated to address the release of selenium from historical phosphate rock mining in southeastern Idaho.

Federal statute provides that the Administrator may apply the requirements to report under EPCRA 313 *if the Administrator determines that such action is warranted on the basis of toxicity of the toxic chemical, proximity to other facilities that release the toxic chemical or to population centers, the history of releases of such chemical at such facility, or such other factors as the Administrator deems appropriate*.[1] As described in this comment document, there have been considerable studies and disclosure of information related to selenium releases from phosphate mining. Also, under CERCLA there is a comprehensive process to address selenium releases from historical mining. Thus, since the information sought to be reported is already in the public domain and the sites are under consent orders under CERCLA, adding phosphate rock mining to the list of facilities subject to EPCRA 313 is unwarranted.

1. Phosphate Mining in Southeastern Idaho.

Phosphate mining has occurred in southeastern Idaho for over a century. Currently, there are three primary mining operations and associated mineral processing facilities in southeastern Idaho. Two companies (J.R. Simplot and Nu-West Industries (Agrium)) mine phosphate rock and use the rock to produce phosphoric acid and phosphate fertilizers. The Monsanto Company mines phosphate rock and uses the rock to produce very high quality phosphorus which is used for a number of products including a very effective herbicide.

The phosphate deposits in southeastern Idaho contain “middle shale” that has elevated concentrations of selenium. Selenium is an essential trace nutrient which can have adverse effects on the environment at certain concentrations. In 1996, selenium

[1] See Title 42 § 11023(b)(2).

releases from historic phosphate mines prompted concerns about potential human health and ecological effects from historic mining operations. Selenium has many chemical forms; some are mobile in the environment and others are not. Selenium, in the middle shales, can become mobile especially after exposure to water. Water contacting certain phosphate middle shales can result in seeps and springs with elevated concentrations of selenium.

Historically, federal land management agencies approved mining practices that included placing middle shales on the surface of land being reclaimed because these shales also contain organic matter that facilitated revegetation. Also, at certain mines, these shales were placed in what is called a cross-valley fill. In a cross valley fill, water would flow through the fill from an upgradient creek and from precipitation percolating through the fill. The water flowing through the fill would pick up selenium from these shales. This water would then appear as a seep, spring or go into groundwater. So, past federally-approved practices have contributed to the release of selenium into the environment.

2. Ecological and Human Health Studies

The companies mining phosphate in southeastern Idaho, through the Idaho Mining Association (IMA) initiated a number of studies (Table 1) to: (a) understand the sources of the selenium contamination, (b) determine the extent of contamination, and (c) examine specific environmental receptors (birds, big game, cutthroat trout, etc.).

Table 1
Studies Performed by IMA

YEAR	STUDY
1997	IMA Interim Surface Water Survey
1998	IMA Regional Investigation
1999	IMA Interim Regional Investigation
2001	IMA Overburden Pile, Seep & On-Site Pond Investigation
2001	IMA Terrestrial Invertebrate & Small Mammal Investigation
2002	IMA Population-Level Assessment Models for Red-winged Blackbird Metapopulations
2002	IMA Analysis of Selenium Levels in Bird Eggs and Assessment on Avian Reproduction
2003/2005	IMA Cutthroat Trout Study
2003	IMA Evaluation of Effects of Selenium on Elk, Mule Deer and Moose

This list is not inclusive.

IMA member phosphate companies signed an agreement with EPA, Forest Service, BLM, Idaho Department of Environmental Quality and the U.S. Fish and Wildlife Service to fund these area-wide studies and agreed to a framework for how selenium contamination would be addressed in southeastern Idaho (Department of Justice 2001). The agreement has led to site-specific studies at the mine sites to determine the extent of contamination, the risks associated with the sites, options for addressing the risks and then implementation of remedies. The site-specific studies were done under Administrative Orders on Consent under CERLCA, and the documents produced under those orders are public documents.

There was participation by a number of federal and state agencies in these studies. Information from these studies, along with other investigations, were used by regulatory agencies to do both an ecological and human health risk assessments. This study, *Final Area Wide Human Health and Ecological Risk Assessment* represents the most comprehensive analysis done on risks associated with phosphate mining in eastern Idaho and looked at other potential pollutants such as cadmium and arsenic besides selenium (Tetra Tech EM Inc. 2002). The risk assessment was then used to develop removal action goals, and action levels for addressing releases and impacts from historic phosphate mining operations in southeast Idaho (Idaho Department of Environmental Quality (IDEQ) 2004). The risk assessment findings were summarized as follows (IDEQ 2004):

> The risk assessment concluded that regional human health risks and population-level ecological risks were unlikely, based on observed conditions in the Resource Area. These conclusions were based on both modeling and a weight of evidence approach considering regional land and recreational use, population distribution, habitat availability, area wide surface and groundwater conditions, and other factors affecting potential exposures.

Human Health

The human health assessment did identify several locations and scenarios that could present elevated risks under conditions of sole use over extended periods of time such as the residential use of waste rock piles or fish diets exclusively from highly impacted first order streams. The hazards associated with ingestion of surface soil were calculated to exceed a Hazard Index (HI) of one at one location due to cadmium, arsenic and selenium. Ingestion of fish tissue was found to be associated with hazards greater than one only for subsistence lifestyle receptors and the child Native American receptor. Currently, the only fish consumption advisory is for a 1st order stream, East Mill Creek. The advisory applies to only children under 15 years of age and recommends that they do not consume more than six (6) meals a month of Yellowstone Cutthroat Trout or Brook Trout (Idaho Department of Health and Welfare 2011).

The Tetra Tech 2002 risk assessment concluded that these conditions (risks from soil and fish tissue ingestion) were considered highly unlikely based on current land use, 1st

order stream characteristics and regional observations over the past seven years (IDEQ 2004).

In addition, to the Tetra Tech 2002 risk assessment, there was a public health assessment conducted by the Idaho Department of Health (Idaho Department of Health and Welfare (IDHW) 2006). Here is a summary of the conclusions from this study:

1. BCEH classifies the Southeast Idaho Phosphate Mining Resources Area as a no apparent public health hazard according to ATSDR's interim public hazard categories (Appendix E).

2. The current, past, and future completed exposure pathways include soil, surface water, sediment, groundwater, and biota (fish, elk, beef, and plants). The most important exposure pathways are ingestion of fish, elk, and beef in the Resource Area.

3. The levels of contaminants in the soil, surface water, sediment, and groundwater in the Resource Area are not high enough to result in any cancer or adverse non-cancer health effects to hunters, anglers, collectors, and residents, including children, living near the Resource Area.

4. It is unlikely that the cadmium, chromium, and selenium in the fish from the Resource Area will result in any adverse health effects to the general public, as well as the Native American subsistence population who consume up to 70 grams of fish every day.

5. It is unlikely that the contaminants in elk muscle and elk liver will result in any adverse health effects to those who eat 8 ounces of elk meat daily, or eat up to 10 ounces of elk liver per month.

6. It is unlikely that the selenium in beef muscle and beef liver will result in any adverse health effects for people eating up to 8 ounces every day.

7. It is unlikely that the contaminants in the plants at the Resource Area, which may be ingested or used by populations living in the Resource Area, will result in any adverse health effects.

8. The health outcome data analysis for the Resource Area showed that there were no statistically significant higher cancer incidence rates for any of the cancer types compared to the remainder of the State of Idaho. Instead, the cancer incidence rates for some cancer types are significantly lower than the remainder of the State of Idaho.

9. The conclusions in this report only apply to the current site conditions. If land uses change, these conclusions may no longer be applicable.

Ecological – General

The ecological risk assessment was done in various Tiers, with Tier I being a worst-case screening level analysis. The Tier II assessment was designed to evaluate an "average" risk to the selected endpoints in the Resource Area. Instead of maximum detected concentrations for each media, an area-weighted average was developed for each media. These average Exposure Point Concentrations (EPC) were designed to predict the average exposure for the entire receptor population in the Resource Area.

Tier I results indicated a likelihood for risks to aquatic and terrestrial ecological receptors residing in localized areas of highly elevated concentrations of selenium and mining-related metals.[2] Based on the Tier II assessment, the following conclusions were reached (Tetra Tech 2002):

- The only significant area-wide risks to ecological receptors are presented by selenium and cadmium.
- While selenium and cadmium risks are elevated, they are less than three times the background risk for the Resource Area.
- The risks calculated from the Tier 2 assumptions may significantly underestimate exposure to localized subpopulations of various species.

These conclusions were utilized in the Area Wide Risk Management Plan as noted in IDEQ (2004):

- Areas exhibiting concentrations in excess of regulatory criteria or risk-based levels of concern as a result of historic mining releases are generally limited to a small percentage of the overall Resource Area and do not appear to present regional population level exposures.
- Supplemental mine-specific human health and/or ecological risks, and Lead Agency-tailored contaminants of concern lists may be required at individual mines to evaluate potential unique conditions not considered during the Area Wide risk evaluation process.

As described later in these comments, an approach focused on thoroughly evaluating the contaminants of concern and determining risks is being done on a site specific basis where historical phosphate mining has occurred.

Ecological – Big Game

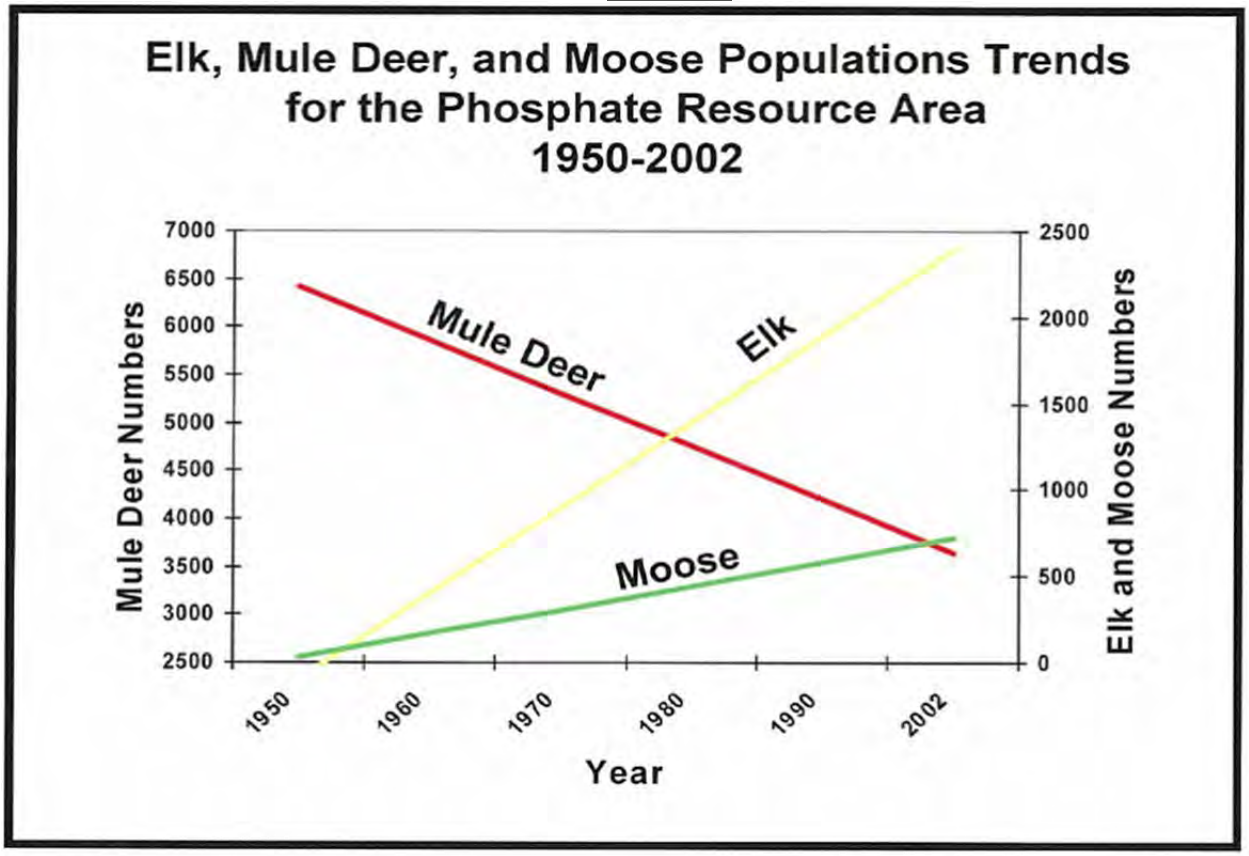
In 1976, a seven-year cooperative research program involving five phosphate mining companies, three federal agencies, and the Idaho Department of Fish and Game was initiated to evaluate the impact of phosphate mining on big game (elk, mule deer, and moose) in the phosphate area of South East Idaho (Kuck, L. 1984). This study and subsequent population data for these species were reviewed and compiled through

[2] The Idaho Department of Environmental Quality identified the following metals as Contaminants of Concerns: cadmium, chromium, nickel, selenium, vanadium and zinc. See IDEQ. 2004, page 7.

2002 in Kuck (Kuck, L. 2003). Figure 1 illustrates big game numbers from 1950 to 2002. Observed trends described in the report are briefly described below:

- Big game numbers reflected habitat and land use changes. Declines in mule deer numbers are due to decreased summer range quality, caused by succession from aspen to conifer types. Mule deer were unable to compensate for heavy harvests and harsh winters that occurred during that period. Mule deer are heavily dependent on forbs and other high-quality forage in the diet.
- Elk numbers steadily increased from the 1930's through the 1980's and have nearly tripled from the 1980's to the present. This probably reflects their relatively broad diet and habitat requirements, and their ability to exploit the changing habitat effectively.
- Moose, on the other hand, increased steadily from the early 1900's through the present. It was speculated that this occurred in response to a concurrent increase in browse production in the phosphate resource area, as aspen stands reached senility. Moose forage almost exclusively on deciduous and young coniferous browse.

Figure 1



As far as selenium effects to big game, the study indicates that there are no "well documented" cases of widespread selenium poisoning in free-ranging wild mammals (Skorupa 1998, USDI 1998). However, isolated chronic selenium poisonings have been associated with the consumption of plants of the genus *Astragalus* that readily absorb and store selenium to high levels. Specific conclusions drawn from Kuck (2003) relative to selenium effects on big game include the following:

- Elk, mule deer, and moose were able to adjust to most phosphate mining activities except for lost habitat. Although phosphate mine activities do impact quality big game habitat, losses between 1950 and 2010 were predicted to be less than 4% of the habitat within the resource area.

- Elk do consume seleniferous forage within the phosphate resource area. About 25 to 30% of the elk sampled had elevated selenium tissue level, but none exceeded livestock toxicity thresholds. Under current conditions, elk population characteristic indicate that this elk herd's health has not been jeopardized. The elk herd remains strong and vigorous.

- The availability of seleniferous forage is limited to less than one percent of the phosphate resource area. Seleniferous forage is not used by the majority of the elk, mule deer, and moose within the area. During the growing season seleniferous forage is used by elk, probably by some mule deer and with little or no use by moose.

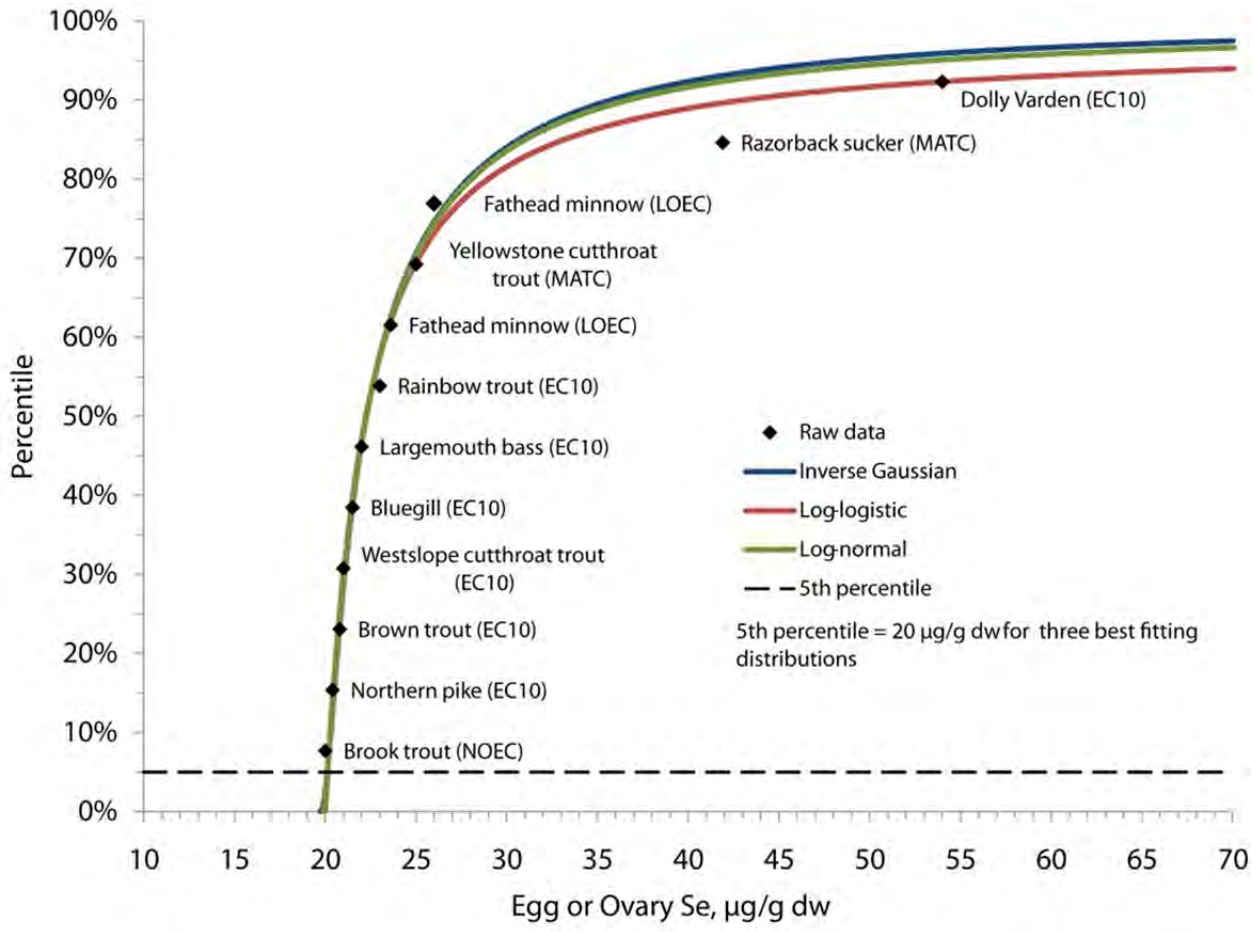
- Consumption of seleniferous forage is limited by availability; selective foraging strategies further limit the duration and frequency of use. Consumed selenium is diluted by the use and availability of non-seleniferous forage, summer range forage abundance allows the selection of forage without selenium.

- Except for possibly some elk, selenium forage is neither available nor used in the winter. Most if not all accumulated selenium may be metabolized by each spring.

Ecological – Fish

The relationship between selenium concentrations in water and impacts on fish is complex and is more contingent on fish dietary intake rather than the aqueous concentrations. Different species of fish may be more or less sensitive than trout to selenium. A University of Idaho study on Yellowstone Cutthroat Trout (YCT) did not show negative effects at whole body fish tissue concentrations of 12.5 ppm (Hardy, et.al. 2009). Based on this study and others, there is evidence that cold water fish exhibit a range of tolerances depending upon the species. Yellowstone cutthroat trout are less sensitive than a number of species, including bluegills, largemouth bass, westslope cutthroat trout, brown trout, and brook trout (Deforest et al. 2011). Figure 2, from shows a species sensitivity distribution for both warm and cold water species based on egg/ovary selenium concentrations (original figure reproduced here is from DeForest et. al. 2011). As illustrate, the order of increasing tolerance for salmonids (from lowest to highest tolerance) is as follows: brook trout, brown trout, Westslope cutthroat trout, rainbow trout, YCT, and Dolly Varden.

Figure 2
Sensitivity to Selenium Toxicity for Various Fish Species



In recent years, both the U.S. Fish and Wildlife Service (USFWS) and IDFG, have reviewed YCT populations and potential threats such as mining. In regards to phosphate mining, USFWS concluded:

> "However, while selenium poisoning should not be minimized as a threat to conservation populations of YCT in the Blackfoot and Salt River watersheds, it remains a localized threat and would not be expected to cause range wide loses of YCT conservation populations." (USFWS 2006)

The Idaho Department of Fish & Game (IDFG) had a similar conclusion:

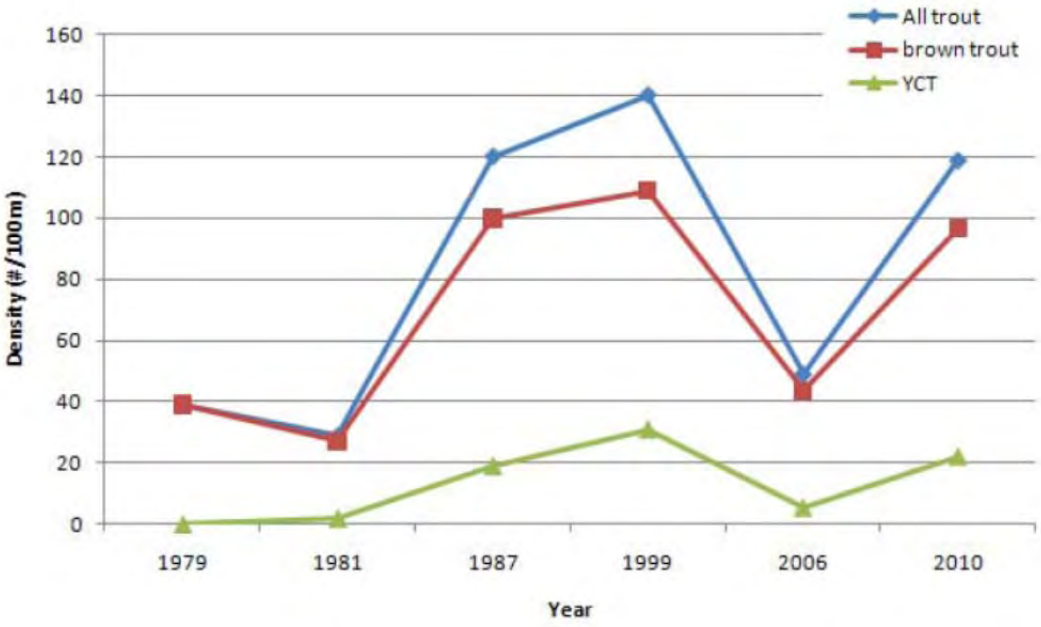
> "Selenium is potentially an issue in the Blackfoot River and in the Salt River side of the Palisades/Salt River GMUs (Geographic Management Units), but at this time, there is no information documenting adverse impacts to YCT populations." (Idaho Department of Fish and Game 2007)

The YCT management plan by IDFG identifies as a priority the following:

- "Establish selenium sampling and analysis standards through a multi-agency process to ensure that mine-generated selenium is not having population level effects on cutthroat trout."
- "Monitor potential effects from phosphate mining on YCT populations in cooperation with other parties."

Extensive fish population and other aquatic information have been gathered in the Crow Creek drainage (near the Smoky Canyon Mine). These streams have elevated concentrations of selenium in the aquatic environment. Extensive monitoring, conducted over several decades, has shown that trout populations in Sage Creek just upstream of Crow Creek are within the historic range, both pre- and post-mining (see Figure 3) (Formation Environmental 2011).

Figure 3
Long-Term Trout Density Estimates at Sage Creek near Crow Creek Road



The Greater Yellowstone Coalition (GYC) is supporting a report by Van Kirk and Hill (2007) that uses a stochastic population simulation (model) to predict effects on trout population based on individual-level toxicity. The report, using this population model, predicts that current selenium concentrations in southeastern Idaho will lead to population declines in local trout populations. The report presents no new information on fish-tissue concentrations in the proposed project area, nor does it present new toxicity or health effects information on selenium and trout. The report has no information that validates selenium toxicity in this population model.

An analysis of this report shows that this approach has shortcomings and field information does not support the results from this modeling (Parametrix and Cramer Fish Science 2007). All models rely on assumptions; the assumptions used by Van Kirk and Hill appear to have over-estimated the potential effects of selenium.

- The selenium residue data used by the authors are not necessarily indicative of concentrations in spawning trout (and hence embryos).

- The species, sizes and ages of the fish sampled were not specified, nor were the locations where they were sampled. Whether the species sampled were cutthroat trout (the species modeled) was not specified, nor were their sizes and ages. Such data are needed to index whether the fish were adult spawners. Data on sampling locations would identify whether the fish were resident or migratory cutthroat trout, stocks whose populations behave differently.

- The report also used questionable data from the literature and did not use one key study by Hardy (e.g., which evaluated YCT) in constructing a relationship between selenium residues in trout tissues and effects on trout young of year (YOY). Therefore, the reliability of the relationship that drives the prediction of individual cutthroat trout response to selenium is questionable.

- Most questionable was their assumption that density-dependent (bottleneck) survival occurs only during juvenile stage from fry emergence to age one.

- Substantial evidence in the literature shows that available habitat becomes the strong factor limiting the capacity of streams to support age 2 and older trout. Incorporating survival bottlenecks for older aged fish into the model would tend to ameliorate negative effects during earlier life stages.

Most importantly, the report by Van Kirk and Hill did not provide any information validating the population model described in their report. As shown in Figure 4, field trout population data provides further information that their model over-estimates the potential effects of selenium on cutthroat trout.

The petition request by GYC, dated November 3, 2009, contains numerous inaccuracies in regards to the effects of selenium on trout. The description (page 7 of the petition) of the results of the brown trout studies done by NewFields in 2009 is a mischaracterization. Some of the data cited in the petition are laboratory toxicity results. These results do not translate into actual effects seen in the environment. As shown in Figure 2, trout populations in the area remain within historical norms. Also, on page 7 of the petition are the statements:

> "the (Brown Trout) study validates the extensive research published by Lemly, Hamilton, and others over the last decades in respect to the deleterious effects selenium has on fish. Just as significantly, the study validates the Van Kirk model."

Both of these statements are incorrect. The Brown trout study conducted by NewFields has shown different results to the results published by Lemly and others. And as described earlier, the trout population studies (including the brown trout study) ***do not*** validate the model developed by Van Kirk. As stated earlier, there was never a validation done of the model developed by Van Kirk. The population trends in the area show that at selenium water column and fish tissue concentrations significantly greater than the "thresholds" used by Van Kirk (dry fish tissue of 10.0 μg/g whole body) have not resulted in population decreases of cutthroat trout predicted by Van Kirk. (This conclusion also holds true for brown trout).

Livestock

Livestock mortality has occurred where animals (primarily sheep and cattle) have grazed on certain plants that are "hyper-accumulators" of selenium. As described earlier in these comments, it was a common historical practice to place these middle waste shales (which contained higher concentrations of selenium). Thus, certain plants (such as western aster and gumweed) would grow on these shales and accumulate high concentrations of selenium. The U.S. Department of Agriculture, Agricultural Research Service Poisonous Plant Research Laboratory, has published information on these selenium accumulators and how to manage livestock grazing where selenium accumulating plants may occur (U.S. Department of Agriculture 2011).

3. Resolving Selenium Releases from Historical Mining

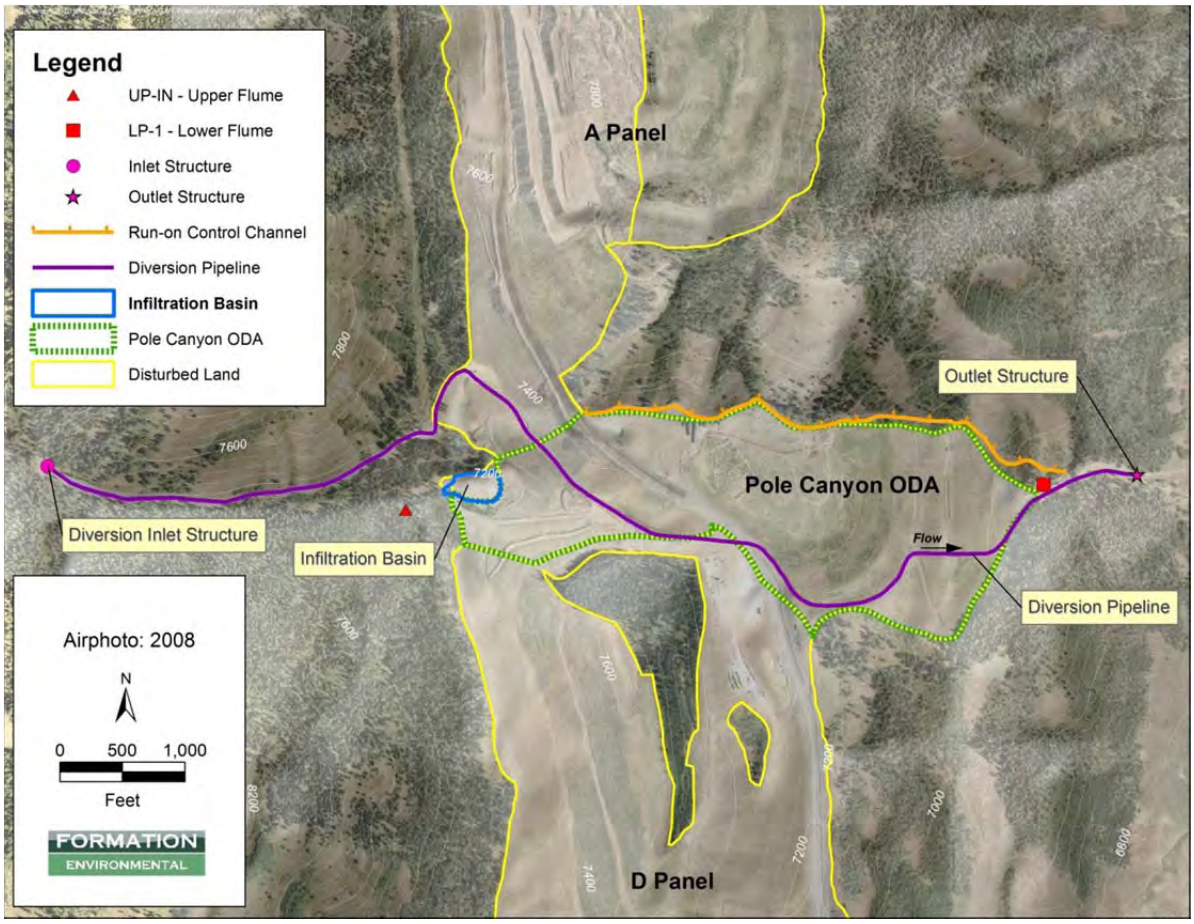
The legal process being used for these studies and corrective actions is CERCLA. Currently the focus of the phosphate companies is site-specific mine studies. The process is at a slightly different "stage" for each site, but essentially there are four main stages: (a) determination of the extent of contamination; (b) identification of risks, (c) evaluation of potential remedies/removal actions and (d) implementation. The process also includes a step for public review and comment on the investigation and proposed actions.

As an example, Simplot's Smoky Canyon Mine was one of the first of the site-specific investigations to be initiated. The timeline of events is as follows:

- In 2003, Simplot entered into a CERCLA AOC to conduct a thorough Site Investigation (SI) and Engineering Evaluation/Cost Analysis (EECA) at the Smoky Canyon Mine with the USFS acting as the lead regulatory agency.
- Simplot conducted the SI in accordance with all requirements of the 2003 CERCLA AOC and USFS-approved SI Work Plan, and the SI Report (NewFields, 2005) was accepted as final by the USFS in 2005.
- Simplot prepared the EECA Report in 2006 (NewFields, 2006). Formal agency approval of the EECA did not occur as the agency chose to go to a RI/FS process.
- A portion of the EECA Report was utilized in the selection of a set of Removal Actions to address selenium transport from one of the overburden disposal areas (ODAs) at the site, the Pole Canyon ODA.
- In 2006, the USFS issued an Action Memorandum for the Pole Canyon Removal Action, and Simplot entered into an Administrative Settlement Agreement to implement the selected Removal Action. [Simplot implemented the Removal Action in 2006-2008.]
- Earlier in 2006, at the same time that Simplot was responding to USFS comments on the draft EECA Report, the USFS elected to change the process used for identifying appropriate Response Actions at Smoky Canyon from the SI/EECA process to a Remedial Investigation/Feasibility (RI/FS) process.

- In the years between the USFS' decision to pursue an RI/FS process at the Smoky Canyon Mine and finalization of the Administrative Settlement Agreement/Consent Order for the RI/FS, Simplot successfully and efficiently implemented the Pole Canyon Removal Action. The SI and EECA identified the Pole Canyon overburden disposal area (ODA), a cross-valley fill disposal setting, as the largest source of selenium to surface water and groundwater. The USFS accepted the EECA for the limited purpose of selecting a Removal Action to address selenium transport from the Pole Canyon cross-valley fill.
- An Action Memorandum for the Removal Action was issued by the USFS, and Simplot entered into an Administrative Settlement Agreement (between Simplot, USFS, IDEQ, US EPA, and U.S. Department of Justice) to conduct the Removal Action in late 2006.
- The engineered components of the Removal Action were constructed from 2006-2008 and are currently operational (see Figure 4).
- Simplot voluntarily initiated a number of additional characterization efforts and pilot treatability studies.
- The Administrative Settlement Agreement/Consent Order for the RI/FS was finalized in August 2009.

Figure 4
Overview of the Pole Canyon Removal Action Components



As described earlier, the Pole Canyon overburden disposal area (ODA) is the largest source of selenium to surface water and groundwater. The corrective action completed included diverting Pole Canyon Creek, construction of an infiltration basin upstream of the ODA and installing a run-on capture channel on the north side of the ODA. This corrective action has resulted in a significant reduction of selenium to the environment (see Table 3).[3]

[3] The November 3, 2009 petition by GY, on page 14 implies that the Pole Canyon Corrective Action has resulted in increased selenium concentrations downstream of the Pole Canyon ODA. The data cited by GYC is an actual seep concentration and does not include the diverted creek flow from the diversion. So, by looking at the total surface water flow from the ODA (the seep and the diverted creek flow and Se concentrations from each, the total mass of selenium released from the ODA has decreased significantly from pre-action conditions.

Table 3
Modeled Annual Selenium Mass Transport, by Year, from the Pole Canyon ODA

Without Removal Action	With Removal Action	Annual Load Reduction Due to Removal Action	Percent Reduction in Annual Selenium Mass Transport
2,024 lbs	579 lbs	1,446 lbs	**71%**
2,802 lbs	911 lbs	1,891 lbs	**67%**
1,918 lbs	329 lbs	1,589 lbs	**83%**

4. Prevention of Releases from New Mining

Historically, mining operations have been approved by the appropriate federal agency and conducted in compliance with the applicable rules and regulations. Since discovery of selenium issues in the late 1990s, the process of phosphate mine permitting (approval) has included comprehensive scientifically based studies to assess the potential for selenium releases and to evaluate measures designed to limit the potential impacts of overburden handling and disposal. As a result, the impact-analysis and permitting process conducted to address requirements of the National Environmental Protection Act (NEPA) now involves extensive input from inter-disciplinary teams of technical specialists in geology, hydrology, water quality, engineering, and fisheries biology representing numerous federal, state, and local entities.

Simplot's recent NEPA experience is related to mine plans submitted for ongoing and expanded mining operations at its Smoky Canyon Mine, which was originally permitted in 1983. The most recent environmental impact analysis conducted for that site, completed in 2008, was for the Panels F and G mine expansion. That project was subject to more than 5 years of in-depth, comprehensive environmental analysis. The materials prepared by Simplot and by the agencies to support the impact analysis were subject to a level of scrutiny not previously experienced for phosphate mining projects. The result is a state-of-the-art mine plan that incorporates unprecedented protective measures to ensure environmental protection (U.S. Dept. of Agriculture – Forest Service 2008). A similar process was recently undertaken for the approval process for Monsanto's Blackfoot Bridge Mine (Bureau of Land Management 2011).

The extent and depth of analysis and planning currently performed to support mine-permitting decisions under NEPA is vastly expanded relative to the past, before the selenium issues related to phosphate mining were known. Thus, the level of selenium releases and associated environmental effects from new mining activities will be

significantly reduced from that of historical mining operations. These improvements will occur by utilization of the following mining methods and technology:[4]

- Overburden will be managed so that the shales, which contain the elevated concentration of selenium, will be segregated from the remainder of the overburden. These materials will typically be placed deep in the reclaimed pits so as to reduce exposure to air and water.
- Cover systems, including a low-permeability clay-type layer or a geosynthetic clay liner laminate, will cover the ODAs that contain selenium bearing shales/materials.
- Implementation of mine water management plans that promote runoff and reduce percolation of water through the reclaimed pits and external overburden disposal areas.
- Use of native vegetation that does not accumulate selenium.
- Extensive monitoring of physical and hydrological properties of cover systems, groundwater and surface water so as to measure performance of cover systems.

5. Summary

The petition before the Agency to require that phosphate rock mining be subject to SARA 313 reporting is entirely based on selenium releases from phosphate mining in southeastern Idaho. As described in this document, these releases were the result of government approved, historical mining methods. There is a very active CERCLA process underway at most of the historical mine sites. This process, which has the opportunity for public involvement, has and is generating thousands of pages of data and studies that go into more detail on the extent of selenium releases and potential associated risks than could ever be gained from SARA 313 reporting.

The petition also cites alleged “harms” to the environment as justification for SARA 313 reporting. A careful review of several of the reports or documents cited in the petition show that the applicability of several of the “studies/reports” to the southeastern Idaho phosphate area is limited or statements given in the petition are incorrect. For example, the draft national criteria form EPA (2004) water quality/fish tissue criteria was derived in part from the toxicity of selenium to bluegills (a warm water fish). Bluegills are not native to or present in the streams in the mining area. Thus, the fish tissue value cited in the petition has limited applicability. Another report cited is the Van Kirk paper, which as described in these comments, has several technical shortcomings including that the model was never validated. Without comparing the model to actual field trout population and fish tissue selenium concentrations, it was never determined if the model had any validity.

[4] These technologies and management methods are described in the Record of Decisions and accompanying Final Environmental Impact Statements for the Smoky Canyon and Blackfoot Bridge mines.

The human health and ecological risks associated with these releases have been studied. The mining area was classified by the Idaho Bureau of Community Health as "no apparent public health hazard." Elevated risks to ecological receptors do exist at specific locations. Studies will continue at specific locations to identify risks, development of options to address these risks and then implementation of corrective measures.

To summarize, from a public "right to know" perspective, there is already a tremendous amount of information available to the public and the issue of concern in the petition (selenium releases to the environment) is being addressed through a number of federal and state agencies (including EPA). As the CERCLA process proceeds the releases of selenium from historical mining are and will continue to be reduced. Any new mining, which also goes through an extensive public involvement and comment process, is thoroughly studied so that such mining does not result in the releases that occurred historically.

Finally, requiring this additional reporting would be inconsistent with principles in President Obama's Executive Order regarding Improving Regulation and Regulatory Review (White House 2011). Specifically, principles:

> "(1) propose or adopt a regulation only upon a reasoned determination that its benefits justify its costs.."
>
> - As pointed out in these comments, the majority of the data that would be reported under SARA 313 is already being reported through the CERCLA process, including detailed determinations of risk. All of this information is available to the public. Thus, there will be little benefit for the costs that would be incurred from additional reporting requirements.
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> "(5) identify and assess available alternatives to direct regulation, …."
>
> - The phosphate mining in southeastern Idaho is already under CERCLA orders to address the releases of selenium. Thus, this existing regulatory process, which includes opportunity for public involvement, is a very valid existing alternative to additional reporting regulation.

Thus, the "value" that would be obtained from an additional reporting requirement (such as SARA 313) is low and will diminish even further in the future. Such new requirements are not consistent with the Administration's policies in regards to having regulations account for benefits and costs and least burdensome.

6. References

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The Fertilizer Institute

Nourish, Replenish, Grow

William C. Herz
Vice President,
Scientific Programs

April 17, 2006

VIA HAND DELIVERY

Stephen L. Johnson, Administrator
U.S. Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Re: Response to Petition to Add Phosphate Rock Mining to the List of Facilities Required to Report Releases of Chemicals Under EPCRA

Dear Administrator Johnson:

By way of correspondence dated January 27, 2006 from Mr. Marv Hoyt of the Greater Yellowstone Coalition (the "Coalition"), the Coalition requested that the U.S. Environmental Protection Agency ("EPA" or "Agency") commence a rulemaking to add Standard Industrial Classification Code ("SIC") 1475, also known as U.S. Industry 212392 under the North American Industrial Classification System ("NAICS"), "Phosphate Rock Mining" to the list of facilities required to report releases of chemicals listed on the Toxics Release Inventory ("TRI"). The Fertilizer Institute ("TFI") provides the following response to the Coalition's rulemaking request and urges EPA to deny the request.

Statement of Interest

TFI is the non-profit trade association of the fertilizer industry that is interested in all phases of the industry, from basic manufacturing to distribution and sale of fertilizers and fertilizer materials to farmers. Many TFI members engage in phosphate rock mining and related activities. As explained further below, TFI believes that adding phosphate rock mining facilities to the list of facilities required to report releases of TRI chemicals would be inconsistent with the plain language of the Emergency Planning and Community Right-To-Know Act ("EPCRA"), case law interpreting EPCRA, and EPA's TRI regulations. Therefore, TFI urges EPA to deny the Coalition's rulemaking petition.

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The Presence of Selenium at Phosphate Mining Facilities Does Not Trigger TRI Reporting Obligations Under EPCRA

The Coalition's request that EPA require phosphate mining facilities to report the release of TRI chemicals is founded on the presence of selenium at those facilities. *See* Greater Yellowstone Coalition, Petition to Add Phosphate Rock Mining to the List of Facilities Required to Report Releases of Chemicals Under SIC Code 1475, or NAICS 212392, at 1-2 (Jan. 27, 2006) (hereinafter "*Coalition Petition*"). According to the Coalition, "[p]hosphate mining has been responsible for the release of large quantities of selenium (Se) in Idaho," and "[c]ontinued mining in the region" allegedly creates "a human and ecological hazard in southeast Idaho." Correspondence from Mr. Marv Hoyt, Idaho Director, Greater Yellowstone Coalition, to Steve Johnson, Administrator, Environmental Protection Agency, at 1 (Jan. 27, 2006); *Coalition Petition*, at 2. We dispute the conclusions reached by the Coalition with respect to the effects of phosphate mining on the environment and believe, at present, that it is unnecessary to enter into a debate regarding the alleged human and ecological impacts of selenium in the environment. As demonstrated below, relevant legal considerations invalidate the Coalition's view that requiring phosphate mining facilities to report under the TRI program would benefit the public. Nevertheless, in the unlikely event that EPA believes it appropriate to evaluate the claims made by the Coalition, TFI would be pleased to provide relevant data and analyses and, in the context of this response, offers the following information.

The human and ecological impacts of selenium from the historic mine sites in southeast Idaho is being investigated under Administrative Orders on Consent issued under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and this information is well documented and available to the public. The active mines have implemented best management practices (BMPs) that were developed with regulatory agency involvement that are designed to minimize the selenium impacts from current mining operations. The mining companies are evaluating the effectiveness of the BMPs and the BMPs appear to be effective. There is a considerable amount of information available to the public as a result of the CERCLA investigations described above. This extensive amount of information was collected under oversight of several Federal and State agencies. All of this information is available to the public in many forms including from a web-site (http://giscenter-ims.isu.edu/SISP) that is maintained by Idaho State University for the Federal and State agencies and the Idaho Mining Association. The additional information collected by the TRI reports would not add a great deal of new information that is not already available to the public from the sources described above.

The Coalition acknowledges that the selenium at phosphate mining facilities exists in its natural state and is extracted from the earth, not produced by the facilities. *Coalition Petition*, at 1 ("Within these phosphate rock bearing formations (Phosphoria), [selenium] occurs naturally and is highest in the Meade Peak Member of the Phosphoria formation."). The Coalition fails to recognize, however, that the presence of selenium in its natural state at phosphate mining facilities does not trigger a threshold activity under EPCRA and, consequently, does not implicate reporting obligations under the TRI program. The Coalition also asserts that selenium is naturally converted to "selenite and selenate when exposed to weathering and oxidation as in open pit mining." *Id.* Similarly, this rationale for listing phosphate rock mining on the TRI fails because any selenium compounds present at mining facilities would be subject to the TRI's *de minimis* exemption.

I. Chemicals Present at Mining Facilities Are Reportable Only If They Have Been "Manufactured" Within the Meaning of EPCRA

The TRI program was created as part of the EPCRA, which was enacted by Congress in 1986 with a view to increasing public awareness of the existence of potentially hazardous chemicals in the environment. Section 313 of EPCRA requires the submittal of annual reports to EPA and state officials of "each toxic chemical listed [on the Toxics Release Inventory ("TRI")] . . . that was manufactured, processed, or otherwise used" at certain covered facilities. 42 U.S.C. § 11023(a), (b). These reports must indicate whether the facility manufactures, processes, or otherwise uses listed chemicals, and the reports must provide an estimate of the maximum amounts of that chemical or chemical compound present at the facility, the methods of disposal or treatment of waste, and an estimate of the amount of that toxic chemical entering the environment. 42 U.S.C. § 11023(g). Facilities need not report the presence of chemicals and chemical compounds that do not undergo any of the statutory threshold activities of "manufacture," "process," or "otherwise use."

Based on the statutory definitions of "manufacture" and "process," the question of whether chemicals and chemical compounds have been subjected to a threshold activity ultimately turns on whether the chemicals have been "manufactured." Congress defined the term "manufacture" to mean "to produce, prepare, import, or compound a toxic chemical." 42 U.S.C. § 11023(b)(1)(C)(i). The term "process" was defined in EPCRA as "the preparation of a toxic chemical, after its manufacture, for distribution in commerce." 42 U.S.C. § 11023(b)(1)(C)(ii) (emphasis added); *see also National Mining Association v. Browner*, 2001 U.S. Dist. LEXIS 915 (D. Colo. 2001) ("*Browner*") (holding that chemicals and chemical compounds are not "processed" if they have not been "manufactured"). Because "processing" of a chemical only occurs, by definition, after "manufacture" of that chemical, mining facilities need not report listed chemicals unless the chemicals have been "manufactured" within the meaning of EPCRA.[1]

A. Naturally Occurring Chemicals Have Not Been "Manufactured" Under the Plain Language of EPCRA

Naturally occurring TRI chemicals present at mining facilities are not "manufactured" chemicals under the plain language of EPCRA. Section 313 of EPCRA requires the "owner or operator of a facility" to complete a "chemical release form" for "each chemical" that was "manufactured, processed, or otherwise used" in quantities exceeding the threshold amounts. "Manufacture" means "to produce, prepare, import or compound a toxic chemical." 42 U.S.C. § 11023(b)(1)(C)(i). In this context, "manufacture" is a verb with a common dictionary definition of "to make into a product suitable for use." Webster's Ninth New Collegiate Dictionary 725 (1985) ("*Webster's*"). This meaning is further supported by the terms cited in the EPCRA definition of "manufacture." *See* 42 U.S.C. § 11023(b)(1)(C)(i). The common

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[1] EPA has interpreted the statutory term "otherwise use" in other contexts as not applying to chemicals that are extracted from the earth at the facility and are managed on-site. *See, e.g.*, 62 Fed. Reg. 23,834, 23,846 (May 1, 1997). As a result, extracting selenium from phosphate rock formations and subjecting the selenium to flotation processes would not constitute the "otherwise use" of the selenium.

definition of "to produce" is "to give being, form, or shape to" and "to make, esp[ecially to] manufacture." *Webster's*, at 938. The common definition of "to prepare" is "to put together: compound." *Id.* at 929. In turn, the common definition of "to compound" is "to form by combining parts." *Id.* at 270. When read together, the definitions plainly support the common definition of "manufacture" as meaning "to make" or "to create."

These definitions also are consistent with EPA's long-standing interpretation that "manufacture" means "to create." In 1997, EPA promulgated a rule expanding the TRI program to activities in the metal mining industry. EPA concluded that "manufacture" under EPCRA means "to produce" or "to create": "'Manufacture' of a specific listed toxic chemical includes its production. EPA interprets 'production' to include creation." 62 Fed. Reg. at 23,849, 23,857. EPA again confirmed this conclusion and further described how the jurisdictional language should be interpreted in a brief the Agency submitted in *National Mining Association v. Browner*: "EPA's interpretation considers a facility to 'manufacture' a toxic chemical if the facility creates, compounds, or imports the toxic chemical." Brief of Defendants in Opposition to Plaintiffs' Request for Relief, at 29 (July 10, 1998) (emphasis added). Accordingly, naturally occurring listed chemicals present at mining facilities have not been "manufactured" under the plain language of EPCRA.

B. Federal Courts Hold that Mining Facilities Need Not Report the Release of Naturally Occurring Chemicals Under EPCRA

The plain language interpretation of "manufacture" to mean "to create" is further supported by two federal district courts that recently have interpreted the scope of EPCRA as applied to operations conducted at mining facilities. *See Barrick Goldstrike Mines, Inc. v. Whitman*, 260 F. Supp. 2d 28 (D.D.C. 2003) ("*Barrick*"); *National Mining Association v. Browner*, 2001 U.S. Dist. LEXIS 915 (D. Colo. 2001). These decisions make clear that EPCRA does not require mining facilities to report naturally occurring listed TRI chemicals, such as selenium that are present at the facility in their original state.

1. The *Browner* Decision

In *National Mining Association v. Browner*, several mining companies and trade organizations challenged a rule promulgated by EPA that subjected certain coal and metal mining operations to the TRI reporting requirements of EPCRA. 2001 U.S. Dist. LEXIS at *3. In promulgating the rule, the Agency interpreted the statutory term "processing" to include the extraction and beneficiation of ores containing naturally occurring listed chemicals (i.e., chemicals that were present in the ores prior to extraction from the earth). *Id.* at *16-*17.

The U.S. District Court for the District of Colorado set aside EPA's interpretation of "processing" because the naturally occurring chemicals in undisturbed ores had not been "manufactured" and, consequently, could not have been "processed" within the meaning of EPCRA. *Id.* at *20-*21; *see also Barrick*, 260 F. Supp. 2d at 42-43 (noting that *Browner* "ruled that 'naturally occurring undisturbed ores are not manufactured' within . . . the meaning of EPCRA.") (citing March 30, 2001 Order of Clarification in *Browner* (clarifying Jan. 16, 2001 Order and Memorandum of Decision)). In so concluding, the *Browner* court adopted the "commonly understood meaning" of "manufacture," which was "(1) something made from raw

materials by hand or by machinery . . . ; (2) the process or operation of making wares or other materials by hand or by machinery especially where carried on systematically with division of labor; and (3) the act or process of making, inventing, devising, or fashioning . . . ." *Browner*, 2001 U.S. Dist. LEXIS at *19 (quotation marks omitted) (citing Webster's Third New International Dictionary 1378 (1986)). The court expressly rejected EPA's argument that the term "manufacture" encompassed creation through natural processes as "contrary to the plain language of the Right-to-Know Act section 313." *Id.* at *20. As a result, EPA was precluded from applying the threshold activities of "manufacture" and "process" to the naturally occurring chemicals for TRI reporting under EPCRA.

Subsequently, EPA embraced the *Browner* decision and abandoned its argument that listed chemicals occurring naturally in the environment were "manufactured" by natural creative processes. That decision more accurately reflects the objective of the TRI program, which is to protect public health, safety, and the environment from chemical hazards created through industrial manufacturing processes. In the 1997 preamble to the rulemaking that subjected metal mines to TRI reporting obligations, EPA interpreted the definition of "manufacture" to include "production" - or "creation" - of a chemical by human process and by natural process. 62 Fed. Reg. at 23,857. The *Browner* court concluded, however, that "the term 'manufacture' connotes human involvement in the creation of a thing." 2001 U.S. Dist. LEXIS 915, at *20 (emphasis added). Consequently, the court set aside EPA's interpretation because "naturally occurring undisturbed ores are not 'manufactured' within the meaning of [EPCRA Section 313]" and because, by definition, a chemical must be "manufactured" before it can be "processed." March 30, 2001 Order of Clarification in *Browner*, at 3 (clarifying Jan. 16, 2001 Order and Memorandum of Decision).

The *Browner* decision also is consistent with prior Agency statements and analyses. Although the court set aside EPA's inclusion of natural creation in the definition of "manufacture," the court confirmed EPA's analysis that "manufacture" of a chemical means "creation" of that chemical. In the 1997 preamble, EPA stated: "'Manufacture' of a specific listed toxic chemical includes its production. EPA interprets 'production' to include creation." 62 Fed. Reg. at 23,857. In addition, in a 1988 rulemaking dealing with Section 313 reporting obligations, EPA interpreted the definition of "manufacture" to mean the human-caused coincidental production of listed chemicals:

> EPA proposed to interpret "manufacture" to include coincidental production of a listed toxic chemical as a byproduct or impurity during the manufacture, processing, use, or disposal of any other chemical substance or mixture. . . . The proposed rule's approach was intended to cover those situations in which a listed toxic chemical is created (intentionally or unintentionally) . . . .
>
> EPA believes that the definition of manufacture in section 313 includes the coincidental production of toxic chemicals.

53 Fed. Reg. 4,500, 4,504 (Feb. 16, 1988).

Significantly, requiring human creation in the "manufacture" of a chemical also is in greater harmony with the statutory language. To include all natural creative processes in the

interpretation of "manufacture" makes superfluous the phrase "after its manufacture" in the statutory definition of "processing." *See* 42 U.S.C. § 1023(b)(1)(C)(ii). Such an interpretation violates the rules of statutory construction. *See Browner*, 2001 U.S. Dist. LEXIS 915, at *20 (holding EPA's interpretation of the term "manufacture" to include natural creation to be impermissible under the rules of statutory construction); *see also Hibbs v. Winn*, 542 U.S. 88, 101 (2004) ("A statute should be construed so that effect is given to all its provisions, so that no part will be inoperative or superfluous, void or insignificant . . . .") (quoting 2A N. Singer, Statutes and Statutory Construction § 46.06, pp. 181-86 (rev. 6th ed. 2000) (footnotes omitted)).

2. The *Barrick* Decision

The decision in *Barrick Goldstrike Mines, Inc. v. Whitman* further reinforced the principle from *Browner* that naturally occurring chemicals present at mining facilities have not undergone any threshold activity for purposes of TRI reporting under EPCRA. 260 F. Supp. 2d 28 (D.D.C. 2003). In *Barrick*, a mining company challenged EPA's interpretation of "processing" as applied to natural impurities in the company's gold mining products. *Id.* at 40. Originally, EPA asserted that naturally occurring listed chemical impurities present in dore[2] had been "processed" and, as a result, were subject to TRI reporting under EPCRA. *Id.* at 41. The U.S. District Court for the District of Columbia noted that EPA's argument was founded, as the Agency had argued in *Browner*, on the proposition that listed chemicals created naturally in the environment had been "manufactured" and could therefore be "processed." *Id.* at 41-42.

The *Browner* decision, however, was issued after the initial filing of briefs in *Barrick*, and the Agency thereafter abandoned its argument to the *Barrick* court that "manufacturing" could occur through natural creative processes. *Id.* EPA also acknowledged to the *Barrick* court that the "manufacture" of a chemical connoted the "creation" of that chemical. *Id.* at 42. With the removal of EPA's "natural creation" interpretation of "manufacture" by the *Browner* decision, and consistent with EPA's 1997 rulemaking and statements to the *Barrick* court, "human creation" of a chemical is an essential element in the definition of "manufacture." As a result, the *Barrick* court concluded that there existed "no alternative legal theory by which the Court can find that the naturally-occurring impurities in the dore have been 'manufactured' within the meaning of EPCRA."[3] *Id.* The court further concluded that because the naturally occurring impurities in the dore had not been "manufactured," they could not have been "processed." *Id.* at 42-43. Consequently, although the naturally occurring listed chemicals present in dore had been extracted from the ore and had undergone beneficiation, the court held that the listed chemicals

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[2] The dore at issue in *Barrick* is a mining product consisting predominantly of gold and silver that is poured into metal bars and distributed in commerce. 260 F. Supp. 2d at 32. The dore has been subjected to the extraction and beneficiation processes.

[3] Specifically, the *Barrick* court indicated that naturally occurring chemical impurities in the mined ore could feasibly have been "manufactured" during the extraction or beneficiation stages based on the inclusion of the term "prepare" in the statutory definition of "manufacture." 260 F. Supp. 2d at 42; *see also* 42 U.S.C. § 11023(b)(1)(C)(i) ("The term 'manufacture' means to produce, prepare, import, or compound a toxic chemical."). EPA, however, "foreclosed th[at] interpretation of the statute" by maintaining that the term "prepare" in the definition of "manufacture" means "to create." *Id.* Consequently, the court found "no basis for concluding that [the mining company] has created and therefore 'manufactured' the impurities contained in the ore." *Id.*

had not been subjected to any statutory threshold activity that would trigger TRI reporting obligations. *Id.* Thus, consistent with *Browner* and *Barrick*, naturally occurring listed chemicals contained in undisturbed ores have not been "manufactured" within the meaning of EPCRA and, as a result, cannot be "processed" thereafter at mining facilities.

C. The Presence of Selenium at Phosphate Mining Facilities Would Not Trigger Reporting Obligations Under EPCRA

As discussed above, in enacting EPCRA, Congress did not seek to regulate all TRI chemicals that are created by natural processes in the earth, but rather only those listed chemicals that certain facilities "manufacture," "process," or "otherwise use." The Coalition recognizes that the selenium at issue at phosphate mining facilities is naturally occurring selenium, not selenium that is created, or "manufactured," by the facilities. *See Coalition* Petition, at 1 ("Within these phosphate rock bearing formations (Phosphoria), Se occurs naturally..."). As a result, based on the *Browner and Barrick* decisions, the presence of naturally occurring selenium at phosphate mining facilities would not implicate reporting obligations under the TRI program.

II. Even Assuming the "Manufacture," "Processing," or "Otherwise Use" of a TRI Listed Chemical at Phosphate Rock Mining Facilities, the *De Minimis* Exemption Would Preclude Reporting

In its Petition, the Coalition asserts that naturally occurring selenium at phosphate rock mining facilities "is transformed into the soluble forms of selenite and selenate when exposed to weathering and oxidation as in open pit mining processes." *Coalition Petition*, at 1. Assuming *arguendo* that selenite and selenate are subsumed by the TRI chemical listing "selenium compounds," naturally occurring selenium transformed into selenite and selenate when exposed to nature would not lead to the reporting of selenium because the selenite/selenate exists as a mixture with other chemicals in the ore and, as such, would be eligible for the *de minimis* exemption.[4] 40 C.F.R. §§ 372.65(c), 372.38(a). According to the TRI regulations:

> If a toxic chemical is present in a mixture of chemicals at a covered facility and the toxic chemical is in a concentration in the mixture which is below 1 percent of the mixture, or 0.1 percent of the mixture in the case of a toxic chemical which is a carcinogen as defined in 29 CFR 1910.1200(d)(4), a person is not required to consider the quantity of toxic chemical present in such mixture when determining whether an applicable [reporting] threshold has been met under § 372.25 or determining the amount of release to report under § 372.30.

40 C.F.R. § 372.38(a).

Selenium is not considered a carcinogen as defined in 29 C.F.R. § 1910.1200(d)(4); thus, one percent is the relevant threshold. In its Petition, the Coalition asserts that "hot spots" exist where the selenium concentration is 200 mg/kg. *Coalition Petition*, at 4. According to TFI's members, data collected at the North Maybe and South Maybe Canyon mines indicate that the selenium

[4] This assumes that EPA grants the Coalition's Petition and subjects phosphate rock mining to the "metal compounds category" set forth at 40 C.F.R. § 372.25(h).

concentration in the center waste shale (the material with the largest selenium concentration) does not exceed 200 mg/kg as the Coalition asserts. Rather, the largest reported concentration at either mine is 126 mg/kg.

Without opining as to the accuracy of the Coalition's assertion, even assuming it is true, this concentration (200 ppm) is well less than the 10,000 ppm *de minimis* non-carcinogenic threshold and the 1,000 ppm carcinogenic threshold. As such, the quantity of selenium compounds at a site would not be considered for purposes of determining whether the manufacture, processing, or otherwise use reporting threshold is exceeded.

Conclusion

For the reasons stated above, TFI opposes the Coalition's petition and respectfully requests that EPA deny the request to add Phosphate Rock Mining to the list of facilities required to report releases of chemicals listed on the TRI. Should the Agency have any questions with respect to this matter, please feel free to contact me at (202) 515-2706.

Sincerely,

William C. Herz
Vice President, Scientific Programs